

IN THE CLAIMS

1. (Canceled)
2. (Currently Amended) The computer system of claim 34 ~~claim 1~~, and further comprising:
a graphical user interface for selecting a sequence of commands to be output
by the computer.
3. (Currently Amended) A computer system for configuring a machine to automatically perform a method of isolating nucleic acid, the computer system comprising:
a computer;
a computer readable medium comprising machine readable instructions for
causing the computer to output a command series to an automated
nucleic acid isolation machine for control of the functions of nucleic
acid isolation process;
wherein the computer readable medium further comprises:
a software module comprising:
a centrifuge sub-module for issuing commands initiating centrifuging
of a sample for a centrifuge time and a centrifuge speed;
an aspirate sub-module for issuing commands initiating aspirating a sample to remove
a volume of fluid from a sample;
a mixing sub-module for issuing commands initiating mixing a
sample; and

a dispensing sub-module for issuing commands initiating dispensing into a sample

an amount of a specific reagent; The computer system of claim 1, wherein the

command series comprises:

loading a vessel containing a biological blood sample into a centrifuge;

centrifuging the sample for a predetermined time and at a predetermined g-force;

removing excess supernatant from the centrifuged sample;

mixing the biological blood sample in the vessel by aspirating and dispensing a

predetermined quantity of sample at ~~a selectable aspiration rate from gentle to~~

~~vigorous~~ a predetermined number of times;

dispensing into the biological blood sample a predetermined quantity of a first reagent;

mixing the biological blood sample in the vessel by aspirating and dispensing a

predetermined quantity of sample at ~~a selectable aspiration rate from gentle to~~

~~vigorous~~ a predetermined number of times;

dispensing into the sample a predetermined quantity of a second reagent;

mixing the sample by aspirating and dispensing a predetermined quantity of sample at ~~a~~

~~selectable aspiration rate from gentle to vigorous~~ a predetermined number of

times;

centrifuging the sample for a predetermined time and at a predetermined g-force;

removing excess supernatant from the sample;

transferring ~~the remaining~~ material remaining after removing excess supernatant to a

second vessel containing a predetermined volume;

mixing the sample by aspirating and dispensing a predetermined quantity of sample at a selectable aspiration rate from gentle to vigorous a predetermined number of times;

centrifuging the sample for a predetermined time and at a predetermined g-force;

removing excess supernatant from the sample;

dispensing into the sample a predetermined quantity of a third reagent;

mixing the sample by aspirating and dispensing a predetermined quantity of sample at a selectable aspiration rate from gentle to vigorous a predetermined number of times;

centrifuging the sample for a predetermined time and at a predetermined g-force;

removing a predetermined quantity of material from the sample; and

dispensing into the sample a predetermined amount of a fourth reagent.

4. (Currently Amended) The computer system of claim 3, wherein the command series further comprises removing and storing the ~~sample~~ vessel containing the biological blood sample.

5. (Original) The computer system of claim 3, wherein the command series further comprises dispensing additional reagents as necessary.

6. (Currently Amended) The computer system of claim 3 ~~claim 1~~, wherein the computer readable medium comprises:
a control module comprising:

a program module comprising a set of machine readable instructions for
issuing commands to the automated nucleic acid isolation apparatus to
perform a series of steps on the sample, comprising:

centrifuging a the sample;
removing a the sample;
mixing a the sample; and
adding a reagent to the sample.

7. (Original) The computer system of claim 6, wherein the control module is implemented in a dedicated processor.
8. (Original) The computer system of claim 6, wherein the program module is burned into a processor in hard code.
9. (Original) The computer system of claim 6, wherein the program module is implemented in a programmable logic controller.
10. (Currently Amended) The computer system of claim 34 ~~claim 1~~, wherein the computer readable medium comprises a control module, the control module comprising:
a plurality of sub-modules, each sub-module comprising machine readable
instructions for creating a command to the nucleic acid isolation apparatus to
perform a process step of the nucleic acid isolation process; and
an output link for communicating the commands to the nucleic acid isolation

apparatus.

11. (Currently Amended) The computer system of claim 10, wherein the plurality of sub-modules comprises:

a centrifuge sub-module for issuing commands initiating centrifuging of a the sample for a predetermined time and speed;

a removal sub-module for issuing commands initiating removing a volume of fluid from a the sample;

a mixing sub-module for issuing commands initiating mixing a the sample; and

a dispensing sub-module for issuing commands initiating dispensing into a the sample an amount of a specific reagent.

12. (Original) The computer system of claim 10, and further comprising

a user input/output interface for programming a process comprising a plurality of invocations of the various sub-modules of the computer module.

13. (Original) The computer system of claim 10, wherein each of the sub-modules is configured to accept input of values for issuing commands.

14. (Original) The computer system of claim 34 ~~claim 1~~, wherein the command series comprises:

dispensing into a sample in a first vessel a predetermined quantity of a first reagent;
mixing the sample;

centrifuging the sample;

removing excess supernatant from the centrifuged sample;

dispensing a predetermined quantity of a second reagent into the sample;

dispensing a predetermined quantity of a third reagent into the sample;

mixing the sample;

centrifuging the sample;

transferring a supernatant fraction of the sample containing nucleic

acid to a second vessel;

dispensing a fourth reagent into the fraction of the sample;

mixing the fraction of the sample;

centrifuging the fraction of the sample;

dispensing a fifth reagent to the fraction of the sample;

mixing the fraction of the sample;

centrifuging the fraction of the sample;

dispensing a sixth reagent into the fraction of the sample;

mixing the fraction of the sample; and

centrifuging the fraction of the sample.

15. (Original) The computer system of claim 14, wherein mixing comprises rotating a predetermined number of times at a predetermined rate.

16. (Currently Amended) The computer system of claim 14, wherein centrifuging comprises:
loading a the vessel containing a sample into a centrifuge;
centrifuging the sample for a predetermined time and speed; and

unloading a the vessel containing a biological sample after centrifugation.

17-21. (Canceled)

22. (Currently Amended) A computer system for configuring a machine to automatically perform a method of isolating nucleic acids, the computer system comprising:

a computer;

a computer readable medium comprising machine readable instructions for causing the computer to output a command series to an automated nucleic acid isolation machine for control of the functions of nucleic acids isolation process;

wherein the computer readable medium comprises:

a software module comprising:

a centrifugation sub-module for issuing commands initiating centrifuging of a sample for a centrifuge time and a centrifuge speed;

a mixing sub-module for issuing commands initiating mixing a sample;

a dispensing module for issuing commands initiating dispensing into a sample an amount of a specific reagent;

a temperature control module for issuing commands to control the temperature of a function;

a removal module for issuing commands to remove material from a sample;

a separation module for issuing commands to separate a sample into components; and

a combination removal and separation module for issuing commands to control separating and removing a sample;

wherein each sub-module except the centrifugation sub-module is configured to control operation external to a centrifuge.

23. (Original) The computer system of claim 22, and further comprising:

a graphical user interface for selecting a sequence of commands to be output by the computer.

24-28. (Canceled)

29. (Currently Amended) A computer control module for an automated nucleic acids isolation apparatus, the control module comprising:

- a plurality of sub-modules, each sub-module comprising machine readable instructions for creating a command to the nucleic acids isolation apparatus to perform a process step of the nucleic acids isolation process; and
- an output link for communicating the commands to the nucleic acids isolation apparatus; wherein the plurality of sub-modules comprises:
 - a centrifuge sub-module for issuing commands initiating centrifuging of a sample for a centrifuge time and a centrifuge speed;
 - a mixing sub-module for issuing commands initiating mixing a sample;
 - a dispensing module for issuing commands initiating dispensing into a sample an amount of a specific reagent;
 - a temperature control module for issuing commands to control the temperature of a function;
 - a removal module for issuing commands to remove material from a sample;
 - a separation module for issuing commands to separate a sample into components; and
 - a combination removal and separation module for issuing commands to control separating and removing a sample;

wherein each sub-module except the centrifugation sub-module is configured to control operation external to a centrifuge.

30. (Original) The computer module of claim 29, and further comprising a user input/output interface for programming a process comprising a plurality of invocations of the various sub-modules of the computer module.

31. (Original) The computer module of claim 29, wherein each of the sub-modules is configured to accept input of values for issuing commands.

32. (Original) The computer control module of claim 31, wherein the control module is implemented in a machine readable medium comprising a set of machine readable instructions.

33. (Original) The computer module of claim 29, wherein the control module is implemented in a dedicated processor.

34. (Currently Amended) A computer system for configuring a machine to automatically perform a method of isolating nucleic acid, the computer system comprising:
a computer;

a computer readable medium comprising machine readable instructions for
causing the computer to output a command series to an automated
nucleic acid isolation machine for control of the functions of nucleic
acid isolation process;

wherein the computer readable medium further comprises:

a software module comprising:

a centrifuge sub-module for issuing commands initiating centrifuging
of a sample for a centrifuge time and a centrifuge speed;

a removal sub-module for issuing commands initiating removing from a sample
container volume of fluid from a the sample;

a mixing sub-module for issuing commands initiating mixing a the
sample; and

a dispensing sub-module for issuing commands initiating dispensing into a the
sample an amount of a specific reagent;

wherein each sub-module except the centrifugation sub-module is configured to
control operation external to a centrifuge.

35. (Currently Amended) The computer system of claim 34, wherein the computer readable medium comprises:

a control module comprising:

a program module comprising a set of machine readable instructions for issuing commands to the automated nucleic acid isolation apparatus to perform a series of steps on a sample, comprising:

centrifuging a the sample;

removing a the sample;

mixing a the sample; and

adding a reagent to the sample.

36-37. (Canceled)

38. (Currently Amended) A computer system for configuring a machine to automatically perform a method of isolating nucleic acids, the computer system comprising:

a computer;

a computer readable medium comprising machine readable instructions for causing the computer to output a command series to an automated nucleic acid isolation machine for control of the functions of nucleic acids isolation process;

wherein the computer readable medium comprises:

a software module comprising:

a centrifugation sub-module for issuing commands initiating centrifuging of a sample for a centrifuge time and a centrifuge speed;

a mixing sub-module for issuing commands initiating mixing a the sample;

a dispensing module for issuing commands initiating dispensing into a the sample an amount of a specific reagent;

a temperature control module for issuing commands to control the temperature of a function;

a removal module for issuing commands to remove material from a the sample;

a separation module for issuing commands to separate a the sample into components; and

a combination removal and separation module for issuing commands to control separating and removing a the sample;

wherein each sub-module except the centrifugation sub-module is configured to control operation external to a centrifuge.

39. (Original) The computer system of claim 38, wherein the system operates on samples having a sample volume of approximately 10 milliliters.

40. (Original) The computer system of claim 38, wherein the system operates on samples having a sample volume of up to 50 milliliters.

41-46. (Canceled)